

## REMARKS

This is a complete and timely response to the Final Office Action mailed May 24, 2007. Claims 1-22 are pending in the application. In light of the following remarks, Applicants request reconsideration of the application and pending claims.

### Claim Rejections Under 35 USC § 103 – Claims 1-22

#### A. Statement of the Rejections

Claims 1-22 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent Application Publication No. 2005/0002032 to Wijntjes *et al.*, hereafter *Wijntjes* in view of U.S. Patent No. 4,958,072 to Hofler *et al.*, hereafter *Hofler*.

#### B. Discussion of the Rejections

For a claim to be properly rejected under 35 U.S.C. § 103, “[t]he PTO has the burden under section 103 to establish a *prima facie* case of obviousness. In order to make a proper *prima facie* case of obviousness; three basic criteria must be met, as set forth in MPEP § 706.02(j). First, there must be some suggestion or motivation; either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art references, when combined, must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on Applicant’s disclosure.

Regarding the requirement to teach or suggest all the claim limitations, MPEP § 2143.03 states “To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). ‘All words in a claim must be considered in judging the patentability of that claim against the prior art.’ *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

Applicants' independent claims 1, 9 and 17, as previously presented, each recite at least one element or feature that is not disclosed, taught or suggested by the proposed combination.

Applicants' independent claim 1, includes at least

"a first determination module to identify a quadrant of said movable polarizing code element based on how much illumination passes through a second portion of said movable polarizing code element, the first determination module responsive to a single illumination source that emits light that is directed at and unaltered before encountering the movable polarizing code element and thereafter unaltered before encountering a third illumination detector." (Emphasis added.)

At least this element is not disclosed, taught or suggested by the proposed combination.

In this regard, the Office Action points to element 802A in FIG. 16A of *Wijntjes* as teaching a determination module. The Office Action alleges, "light detected by 802A does not pass through analyzers 116." The Office Action further points to paragraph 108 in support of the position that "*Wijntjes* discloses a separate detector that detects light unaltered by the analyzer (116)." (See Office Action, page 8.) Applicants respectfully disagree.

Applicants respectfully submit that the Office Action has misinterpreted *Wijntjes* because the Office Action has apparently considered the block diagram of the electronic subsystem out of context from the entirety of the optical polarization angle encoder. The system disclosed in *Wijntjes* includes an optical subsystem and an electronic subsystem. The optical polarization angle encoder is rendered inoperative if one of the optical and the electronic subsystems are disabled or removed. In accordance with paragraph 38 of *Wijntjes*, "FIGs. 16A and 16B are block diagrams of one example of the electronic subsystems for the system of FIG. 10A." The system illustrated in FIG. 10A as described in paragraph 31, "is [a] simplified block diagram, in accordance with another embodiment of the subject invention, a system for non-contact encoding of the angle of rotation of an object, such as a polarizer." Thus, it is clear that the illustration of the example electronic subsystem in FIG. 16A must be considered in association with the system of FIG. 10A.

In this regard, FIG. 10A shows head detector 704 that includes three polarizers 116A', 116B', 116C' and three detectors 120A', 120B' and 120C'. Accordingly, the light path illustrated in FIG. 10A includes a source (LED 702), a rotating polarizing wheel (114'), the three polarizers (116A', 116B', 116C') and the three detectors (120A', 120B', 120C'). Each of the three polarizers (116A', 116B', 116C') alter incident light that traverses the rotating polarizing wheel before the light reaches each of the respective detectors (120A', 120B', 120C'). Thus, *Wijntjes* teaches an optical system that alters a light path after the light has passed through a rotating polarizing wheel and before the light encounters a photodetector. The altered light paths, such as those taught by *Wijntjes*, do not disclose, teach or suggest the claimed first determination module that is responsive to a single illumination source that emits light that is directed at and unaltered before encountering the movable polarizing code element and thereafter unaltered before encountering a third illumination detector.

Also in contrast with Applicants' claimed polaroid encoder system, *Hofler* shows a light source 22 that encounters coupler 23, coupler 24, demux 26, and coupler 28 before the emitted light encounters code wheel 52. A light path that includes couplers and a demux alters the emitted light before the light encounters the code wheel. Altered light paths, such as those taught by *Hofler*, do not disclose, teach or suggest Applicants' claimed first determination module that is responsive to a single illumination source that emits light that is directed at and unaltered before encountering the movable polarizing code element and thereafter unaltered before encountering a third illumination detector.

Accordingly, the proposed combination does not teach or suggest all claim limitations. Furthermore, the proposed combination does not lead one of ordinary skill in the art to produce Applicants' claimed polaroid encoder system for at least the reason that both *Wijntjes* and *Hofler* teach away from Applicants' claimed first determination module. As shown above, both *Wijntjes* and *Hofler* teach the use of altered light paths (before and after a movable polarizing code element, whereas Applicants' claimed system does not require fixed, reflective or transmissive polarizers, couplers and a demux) to adjust the light path before encountering an illumination detector.

Thus, the proposed combination fails to disclose, teach or suggest Applicants' claimed system, which includes at least

"a first determination module to identify a quadrant of said movable polarizing code element based on how much illumination passes through a second portion of said movable polarizing code element, the first determination module responsive to a single illumination source that emits light that is directed at and unaltered before encountering the movable polarizing code element and thereafter unaltered before encountering a third illumination detector."

As a result, the proposed combination fails to establish a *prima facie* case of obviousness with respect to Applicants' amended claim 1. Consequently, Applicants' claim 1 is allowable over the proposed combination and the rejection of claim 1 under 35 U.S.C. § 103(a) should be withdrawn.

For at least the reason that claims 2-8 depend directly or indirectly from claim 1 and include all the features of independent claim 1, the rejection of claims 2-8 under 35 U.S.C. § 103(a) should also be withdrawn. *See In re Fine, supra.*

Applicants' independent claim 9, as amended, includes at least "an illumination source arranged such that emitted light is directed at and unaltered before encountering the movable polarizing code element and thereafter unaltered before encountering a third illumination detector." At least this feature of the illuminating step is not disclosed, taught or suggested by the proposed combination.

In contrast with Applicants' claimed method and as described above, *Wijntjes* discloses systems that include one or more fixed polarizers interposed between a rotating polarizer and one or more light detectors. Several embodiments disclose a light path that encounters a reflective polarizer or a transmissive polarizer before the light encounters a light detector. Other embodiments, including the embodiment relied upon by the Office to support the allegation that *Wijntjes* discloses systems that do not alter light after it encounters a rotating polarizing wheel, include polarizers 116A', 116B' and 116C', which necessarily alter light before the light encounters respective detectors 120A', 120B' and 120C'.

Also in contrast with Applicants' claimed method and further described above, *Hofler* shows a light source 22 that encounters coupler 23, coupler 24, demux 26, and

coupler 28 before the emitted light encounters code wheel 52. Thus, *Wijntjes* and *Hofler* teach the use of altered light paths before and after a movable polarizing code element, whereas Applicants' claimed method recites at least the feature of "an illumination source arranged such that emitted light is directed at and unaltered before encountering the movable polarizing code element and thereafter unaltered before encountering a third illumination detector." Accordingly, the proposed combination fails to disclose, teach or suggest Applicants' claimed method which includes at least the step of

"illuminating said movable polarizing code element comprising a first concentric code, a second concentric code and a set of quadrants, the first and second concentric codes in contact with one another over one of the quadrants of said movable polarizing code element, said illuminating comprising an illumination source such that emitted light is directed at and unaltered before encountering the movable polarizing code element and thereafter unaltered before encountering a third illumination detector."

As a result, the proposed combination fails to establish a *prima facie* case of obviousness with respect to Applicants' amended claim 9. Consequently, Applicants' claim 9 is allowable over the proposed combination and the rejection of claim 9 under 35 U.S.C. § 103(a) should be withdrawn.

For at least the reason that claims 10-16 depend directly or indirectly from claim 9 and include all the features of independent claim 9, the rejection of claims 10-16 under 35 U.S.C. § 103(a) should also be withdrawn. *See In re Fine, supra.*

Applicants' independent claim 17, as amended, includes at least "means for illuminating comprising an illumination source such that emitted light is directed at and unaltered before encountering the movable polarizing code element and thereafter unaltered before encountering a third illumination detector." At least this feature is not disclosed, taught or suggested by the proposed combination.

In contrast with Applicants' claimed system and as described above, *Wijntjes* discloses a number of various systems that include one or more fixed polarizers interposed between a rotating polarizer and one or more light detectors. Several embodiments disclose a light path that encounters a reflective polarizer or a transmissive polarizer before the light encounters a light detector.

Also in contrast with Applicants' claimed method and further described above, *Hofler* shows a light source 22 that encounters coupler 23, coupler 24, demux 26, and coupler 28 before the emitted light encounters code wheel 52. Thus, *Wijntjes* and *Hofler* teach the use of altered light paths before and after a movable polarizing code element, whereas Applicants' claimed system recites at least "an illumination source such that emitted light is directed at and unaltered before encountering the movable polarizing code element and thereafter unaltered before encountering a third illumination detector." As a result, the proposed combination fails to establish a *prima facie* case of obviousness with respect to Applicants' amended claim 17. Consequently, Applicants' claim 17 is allowable over the proposed combination and the rejection of claim 17 under 35 U.S.C. § 103(a) should be withdrawn.

For at least the reason that claims 18-22 depend directly or indirectly from claim 17 and include all the features of independent claim 17, the rejection of claims 18-22 under 35 U.S.C. § 103(a) should also be withdrawn. *See In re Fine, supra.*

### CONCLUSION

For at least the reasons set forth above, Applicants respectfully submit that pending claims 1-22 are allowable over the cited art of record and the present application is in condition for allowance. Accordingly, a Notice of Allowance is respectfully solicited. Should the Examiner have any comments regarding the Applicants' response, Applicants request that the Examiner telephone Applicants' undersigned attorney.

Respectfully submitted,

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